

REMARKS

Claims 3, 5-7, 9-16 and 20-38 are pending in the application. By this Amendment, claims 1, 2, 4, 8 and 17-19 are cancelled, claims 3, 5-7 and 9-16 are amended, and claims 20-38 are added. Support for the new claims can be found throughout the originally filed specification and drawings. Reconsideration and withdrawal of the rejections in view of the foregoing amendments and the following remarks is respectfully requested.

ALLOWABLE SUBJECT MATTER

The indication of allowable subject matter in claims 11 and 17 is acknowledged with appreciation. By this Amendment, claims 11 and 17 are canceled. However, the allowable features of these claims are now recited in new claims 21-23 and 29-31.

FORMAL MATTERS

The Office Action objects to claims 1-7 and rejects claims 1-19 under 35 U.S.C. §112, second paragraph, because of a variety of informalities found in the originally filed claims. By this Amendment, certain claims are cancelled and the remaining claims are amended to obviate the rejection under §112. Withdrawal of the rejection is respectfully requested.

THE CLAIMS ARE ALLOWABLE OVER WANG

The Office Action rejects claims 1-5, 7, 18 and 19 under 35 U.S.C. §102(b) over Wang (Great Britain Patent No. 2,266,920). Claims 1, 2, 4, 18 and 19 have been cancelled. Thus, the rejection is moot with respect to the cancelled claims. In addition, independent claim 1 has been

cancelled and replaced with new claim 20. As a result, the rejection will be treated as if it applies to claims 20, 3, 5 and 7.

New independent claim 20 recites a hinge structure for a display device which includes a fixed plate configured to be attached to a support structure, a pivotal plate configured to be attached to a display device, a rotation shaft coupled to the fixed and pivotal plates, a braking housing and a cylindrical braking member. Claim 20 recites that the cylindrical braking member is located between the rotation shaft and the braking housing, and that the braking member provides a frictional force that tends to prevent the pivotal plate from rotating with respect to the fixed plate. Claim 20 also recites that the braking housing includes a stopper guide that is configured to limit rotation of the pivotal plate relative to the fixed plate.

The Wang reference discloses a hinge mechanism that includes several features that are similar to those recited in claim 20. However, Wang fails to disclose any stopper guide on the braking housing that is configured to limit rotation of a pivotal plate relative to a fixed plate. For at least this reason, it is respectfully submitted that claim 20 is allowable over Wang.

Claims 3, 5 and 7 depend from claim 20 and are allowable for at least the reasons discussed above. In addition, the dependent claims recite additional features that are also not shown or suggested by Wang. For instance, claim 5 recites that the stopper guide is fastened to the fixed plate via riveting. It is respectfully submitted that the dependent claims are also allowable for these additional reasons.

In view of the foregoing, withdrawal of the rejection of claims 3, 5 and 7 over Wang is respectfully requested.

CLAIM 6 IS ALLOWABLE OVER WANG AND YANG

The Office Action rejects claim 6 under 35 U.S.C. §103(a) over Wang, in view of Yang (U.S. Patent No. 5,467,504). The rejection is respectfully traversed.

Claim 6 depends from new claim 20. As discussed above, Wang fails to disclose or suggest all the features of claim 20. Specifically, Wang fails to disclose or suggest a hinge structure that includes a braking housing having a stopper guide that is configured to limit rotation of a pivotal plate relative to a fixed plate. Yang fails to cure this deficiency of Wang. Yang has no element that corresponds to the claimed braking housing, let alone a stopper guide on a braking housing, as recited in claim 20. For at least this reason, it is respectfully submitted that claim 6 is allowable over Wang and Yang.

In addition, claim 6 recites additional features that are also not shown in Wang or Yang. Claim 6 recites that a washer is located between an end of a braking housing and a pivotal plate to restrict noise and abrasion. No such washer is present in the Wang mechanism. And because the Yang reference lacks a braking housing, none of the washers present in the Yang mechanism can correspond to the washer recited in claim 6. It is respectfully submitted that claim 6 is allowable over Wang and Yang for these additional reasons.

In view of the foregoing, withdrawal of the rejection of claim 6 over Wang, in view of Yang, is respectfully requested.

THE CLAIMS ARE ALLOWABLE OVER WANG, OKADA AND YANG

The Office Action also rejects claims 8, 9 and 12-16 under 35 U.S.C. §103(a) over Wang, in view of Okada (U.S. Patent No. 5,109,570). Independent claim 8 has been cancelled and replaced with new claim 28. Accordingly, the rejection will be treated as if it applies to claims 28, 9, and 12-16. For the reasons discussed below, the rejections are respectfully traversed.

New claim 28 recites a fixed plate configured to be attached to a supporting structure, first and second pivotal plates configured to be attached to a display device, first and second rotation shafts, first and second braking housings, first and second stoppers, and first and second cylindrical braking members. Claim 28 recites that each of the rotation shafts have a first end coupled to the fixed plate, and a second end coupled to one of the pivotal plates. Claim 28 also recites that each of the first and second braking housings includes a stopper guide with a projection receiving groove that is configured to limit rotation of the pivotal plates with respect to the fixed plate. Claim 28 further recites that each of the stoppers is coupled to the first end of one of the rotation shafts, and that each stopper includes a projection that is received in the projection receiving groove of one of the braking housings.

The disclosure of the Wang reference is discussed above. As noted above, Wang lacks any sort of stopper guide on a braking housing, or a stopper coupled to a rotation shaft that has a projection that is received in the projection receiving groove of the stopper guide.

Okada discloses a hinge mechanism that could be used in connection with a display device. In the Okada mechanism, a pivotal plate 18 is coupled to one end of a rotation shaft 11. Another end of the rotation shaft passes through a circular opening in a fixed plate 10. A rotary

plate 13 is also coupled to the shaft 11 by an inward projection 13b that extends into a keyway 11d on the rotation shaft 11. The rotary plate also includes a projection 13d that abuts a semi-circular exterior surface of a plate 14. Engaging portions 14b and 14c on the plate 14 will contact the projection 13d on the rotary plate 13 to limit rotation of the shaft 11, and thus the pivotal plate 18.

It is respectfully submitted that one of ordinary skill in the art, viewing both the Okada and Wang references, would not have been motivated to modify and combine the features of the two references to arrive at a structure as recited in claim 28. To begin with, the Wang mechanism does not appear to need a rotation limiting structure. Thus, one of skill in the art would have no motivation to combine any of the rotation limiting features of the Okada reference into the Wang reference.

In addition, even if one of skill in the art were motivated to combine features of the two hinge structures, Okada teaches that a separate plate 14 with engaging portions 14b and 14c should be added adjacent a fixed plate 10, and that a rotary plate 13 with a projection 13d should be attached to the rotary shaft. At best, Okada teaches that the rotation limiting engaging portions should be located on the fixed plate itself. Thus, combining the Okada teachings into the Wang structure would result in the rotation limiting engaging portions being formed on the fixed plate 22 of the Wang structure. Because the rotating shaft 30 of the Wang structure is not coupled to the fixed plate, nor is it exposed adjacent the fixed plate, it would be impossible to mount a rotary plate on the shaft 30 that would engage with the rotation limiting engaging portions on the fixed plate 22 of Wang. Thus, one would find it impossible to modify the Wang

structure to include the Okada rotation limiting structure.

The Applicants were the first to realize that a rotation limiting mechanism could be located on the braking housing of a display device hinge structure, and that a stopper that interacts with the rotation limiting mechanism on the braking housing could be mounted on the rotation shaft. Selectively re-combining and modifying the Wang and Okada structures to arrive at a hinge structure as recited in claim 28 would require the impermissible use of hindsight, in view of Applicants' own invention.

For all the above reasons, it is respectfully submitted that the combination of Wang and Okada is improper, and that the rejection of claims 9 and 12-16 should be withdrawn.

CLAIM 10 IS ALLOWABLE OVER WANG, OKADA AND YANG

the Office Action rejects claim 10 under 35 U.S.C. §103(a) over Wang, in view of Okada, and further in view of Yang. The rejection is respectfully traversed.

Claim 10 depends from claim 28 and is allowable for at least the reasons discussed above. In addition, claim 10 recites additional features that are not shown or suggested by even the improper combination of Wang, Okada and Yang. Specifically, claim 10 recites that washer are provided in the contact faces between the stopper guides and the stoppers. In the Okada reference, which is relied upon for the disclosure of a stopper and a stopper guide, no washer is located between these features. More specifically, in the Okada reference, no washer is located between the rotary plate 13 and the plate 14. Wang and Yang fail to cure this deficiency of Okada. Accordingly, withdrawal of the rejection of claim 10 over Wang, in view of Okada, and further in view of Yang is respectfully requested.

NEW CLAIMS 20-38

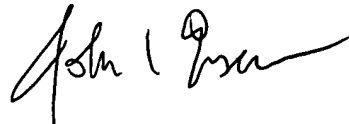
As discussed above, claims 20-38 are added by this Amendment. New claim 20 replaces original claim 1. New independent claim 28 replaces claim 8. It is respectfully submitted that these claims are allowable over the references of record for the reasons given above. The added dependent claims are allowable for the same reasons, and for the additional features they recite. Applicants also note that the allowable features of claims 11 and 17 are now recited in claims 21-23 and 29-31.

CONCLUSION

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. If the Examiner believes that any additional changes would place the application in better condition, the Examiner is invited to contact the undersigned at the telephone number listed below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this, concurrent and future replies, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,
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